Missouri River Mainstem Reservoir System

2011 Flood Regulation

US Army Corps of Engineers
BUILDING STRONG®

Missouri River Mainstem Reservoir System

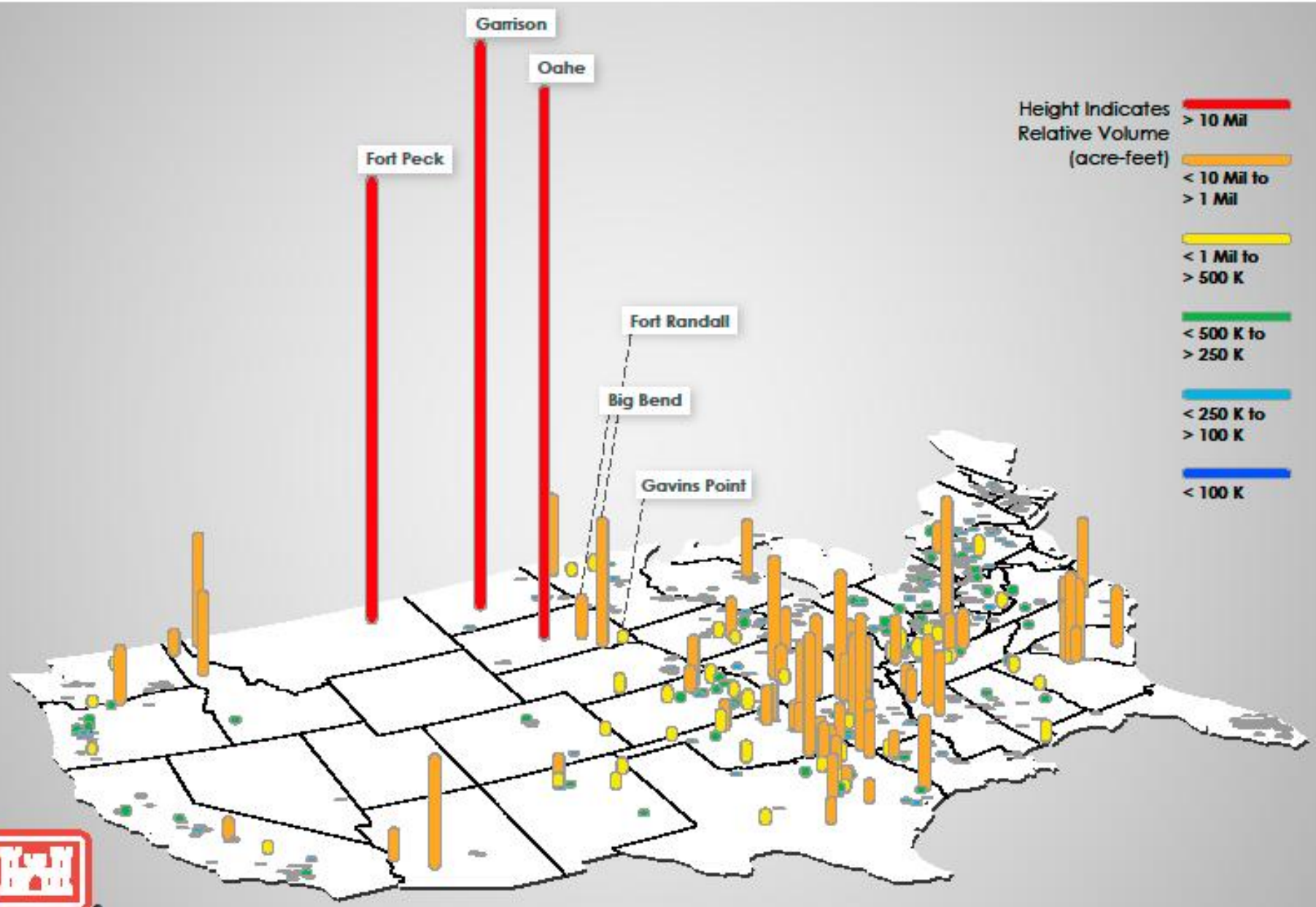
Congressionally Authorized

Project Purposes

- Flood Control
- Navigation
- Hydropower
- Irrigation
- Recreation
- Water Supply
- Water Quality
- Fish and Wildlife

(Including endangered species)

Storage Capacity of Corps Reservoirs



US Army Corps of Engineers
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Prepared and Produced by the U.S. Army Corps of Engineers Omaha District 2010

US Army Corps of Engineers
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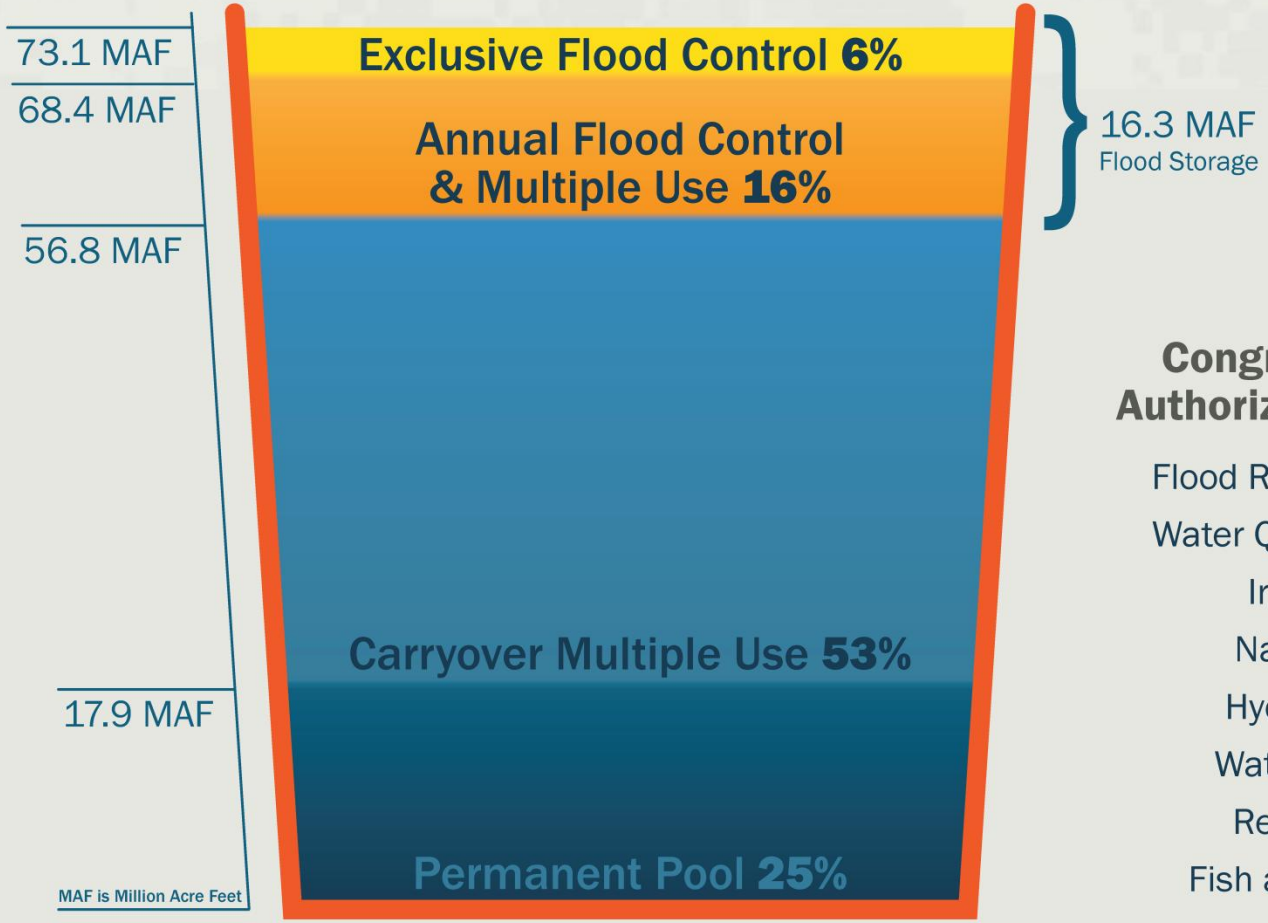
Missouri River
Main Stem Reservoir System

Zones & Allocations of the Total Storage Capacity

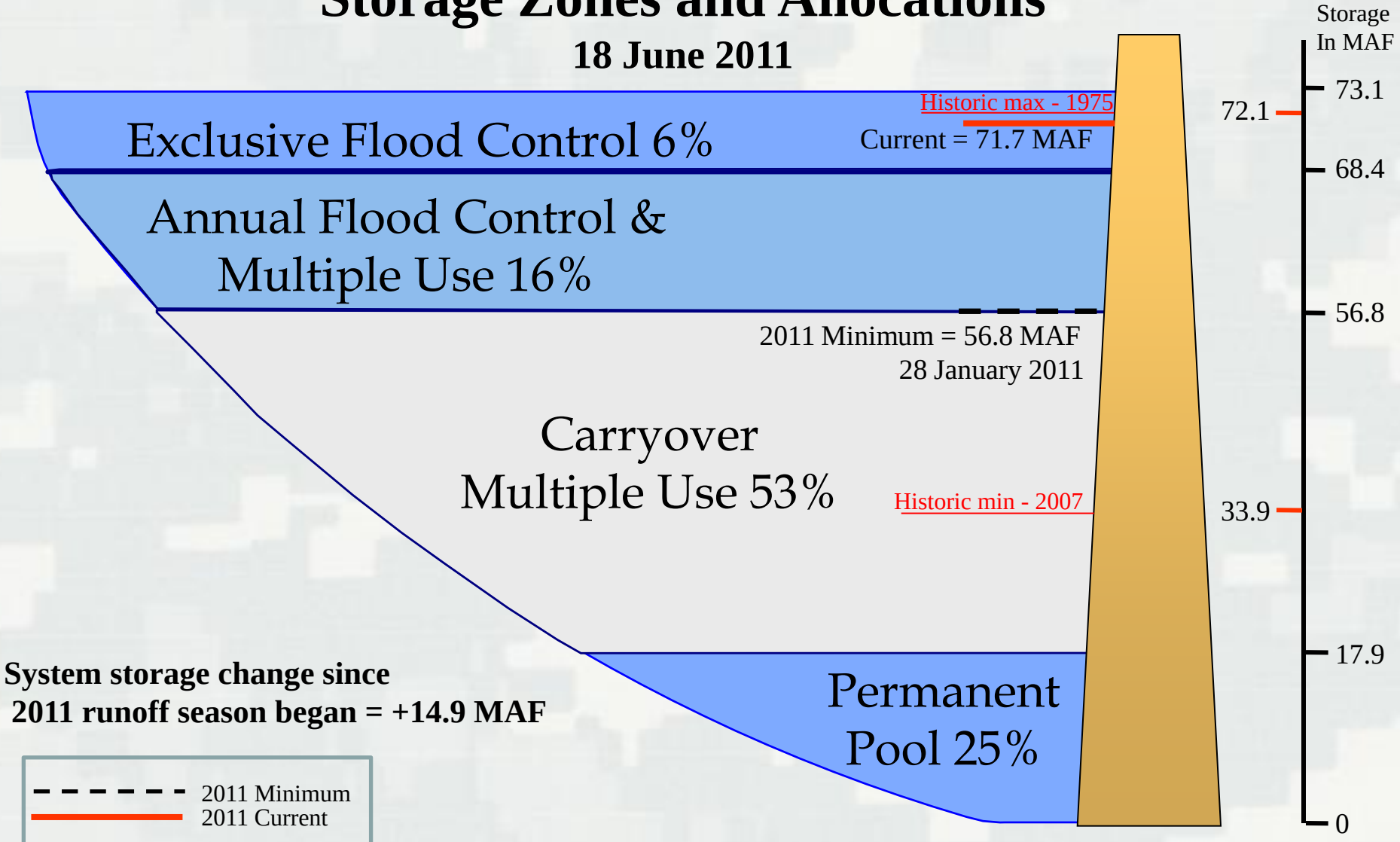


Congressionally Authorized Purposes

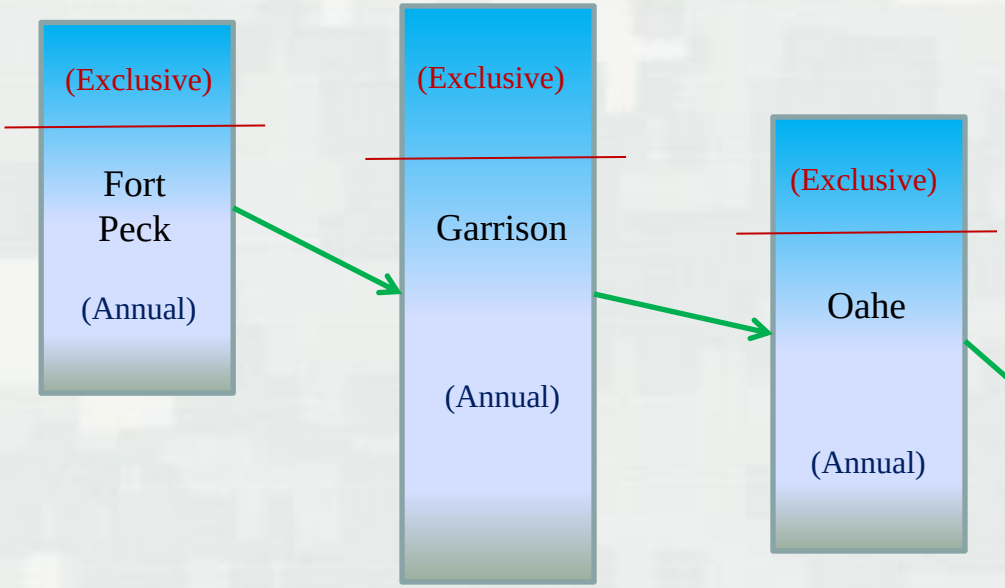
Flood Risk Reduction
Water Quality Control
Irrigation
Navigation
Hydropower
Water Supply
Recreation
Fish and Wildlife

Missouri River Mainstem System Storage Zones and Allocations

18 June 2011



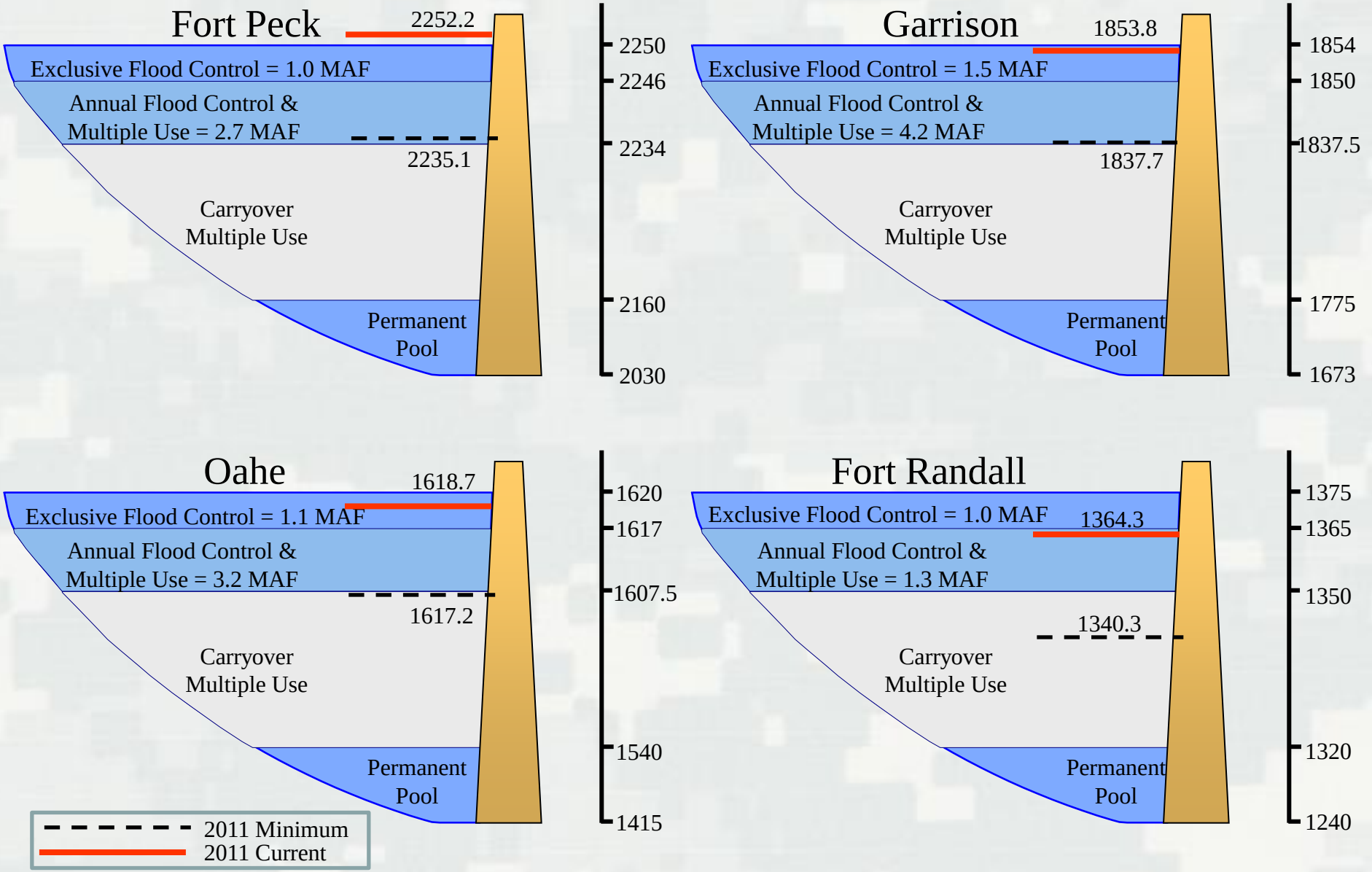
Flood Control Storage



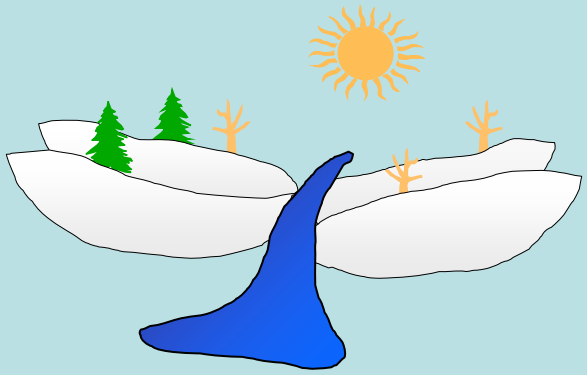
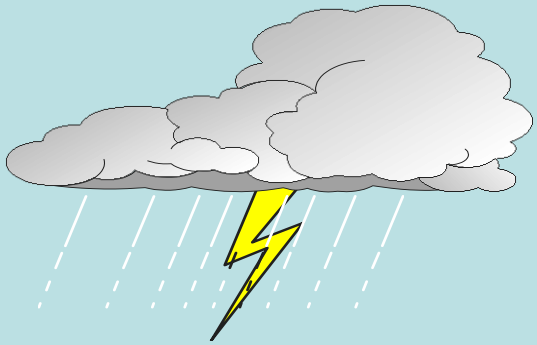
The shapes are to scale and represent the relative size of the total flood control storage (annual + exclusive) at the six mainstem projects.

Project	Total Flood Control Storage (ac-ft)	% of Total Flood Storage
Fort Peck	3,675,000	22.6
Garrison	5,711,000	35.1
Oahe	4,303,000	26.5
Big Bend	177,000	1.1
Fort Randall	2,294,000	14.1
Gavins Point	108,000	0.7

Mainstem Reservoir Levels
18 June 2011



Runoff Components

Plains Snowpack	Mountain Snowpack	Rainfall
		
March and April	May, June and July	March through October

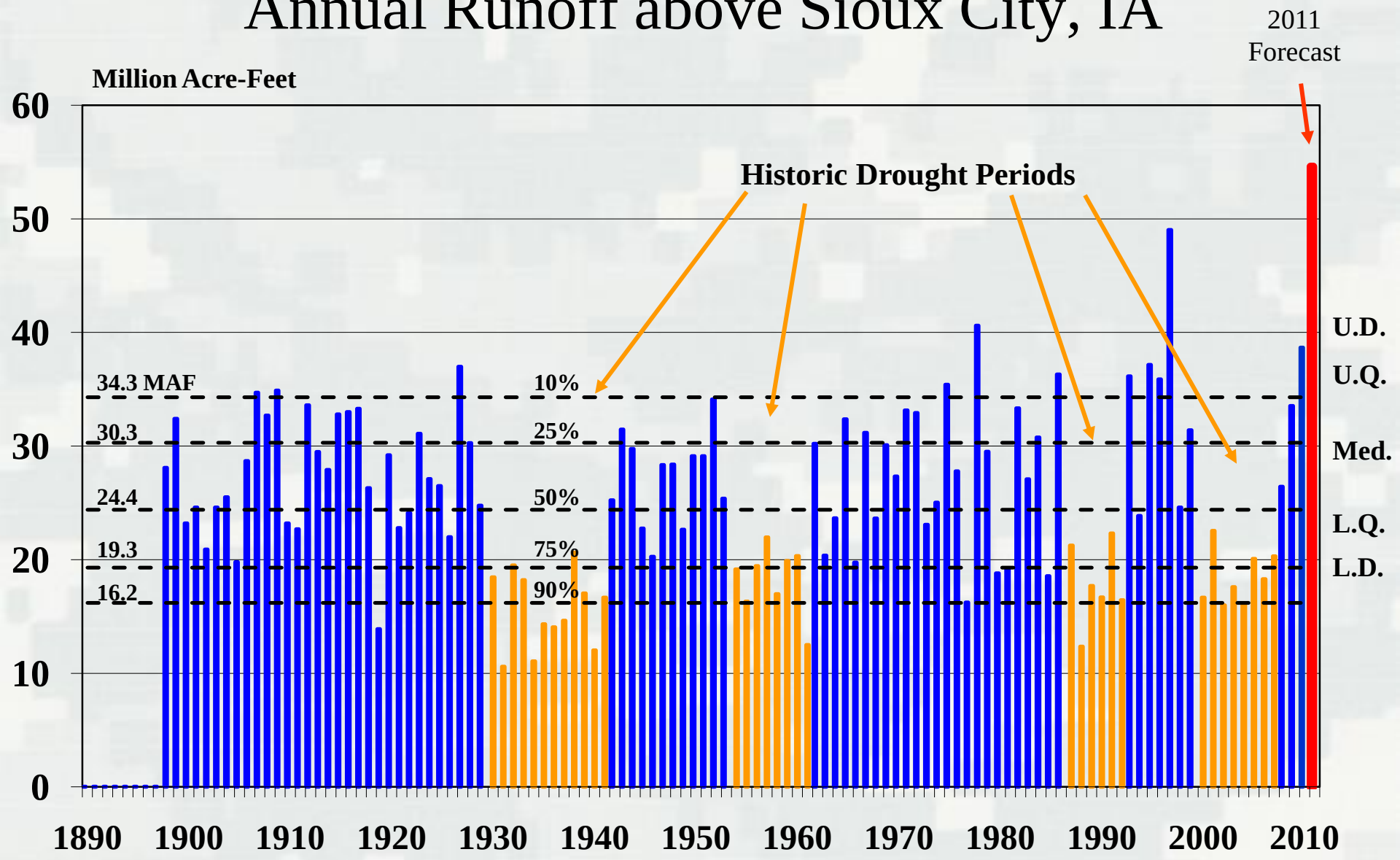
2011 Forecast* = 54.6 MAF

Highest runoff since 1898

Previous Record was 49.0 MAF in 1997

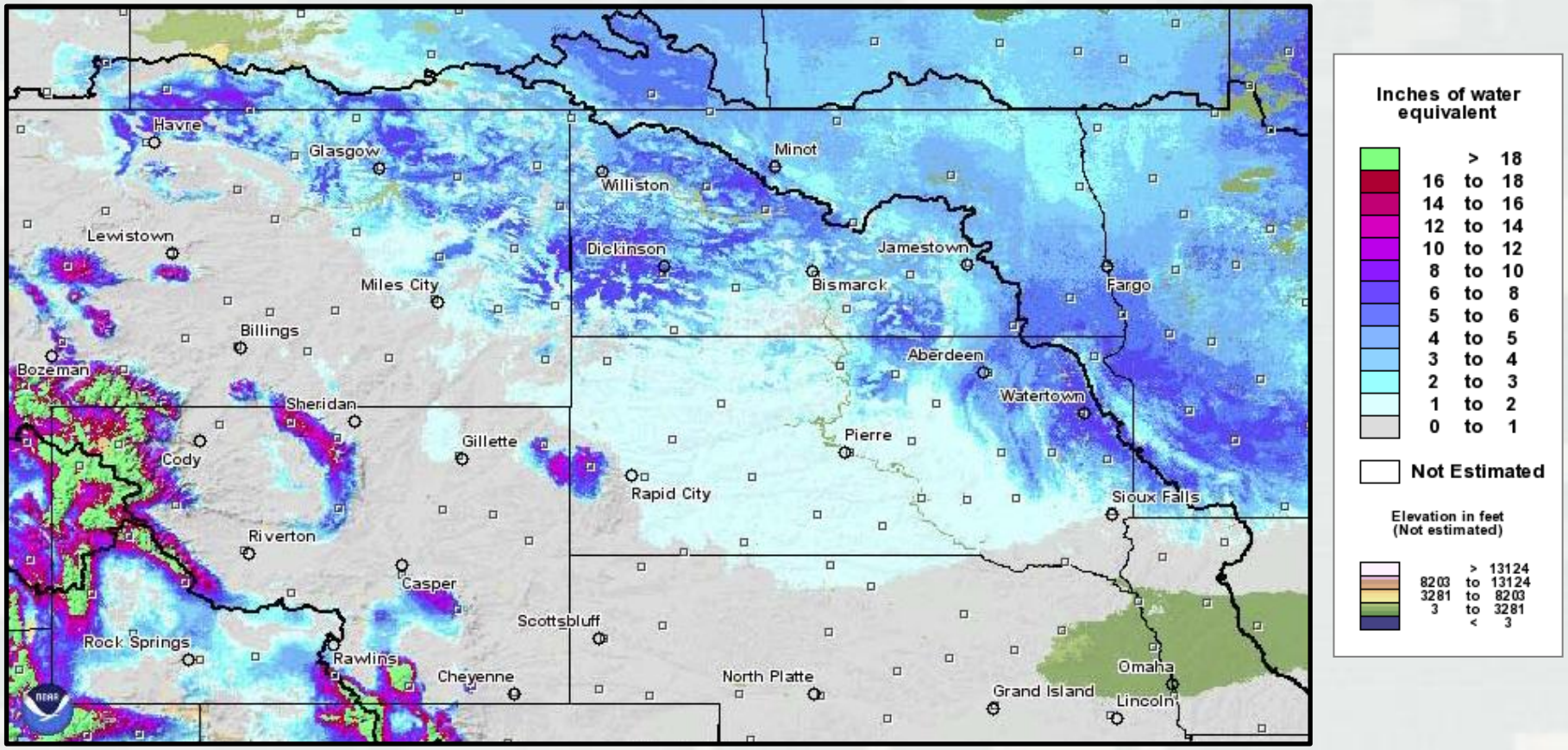
*June 1 Forecast

Missouri River Mainstem System
Annual Runoff above Sioux City, IA



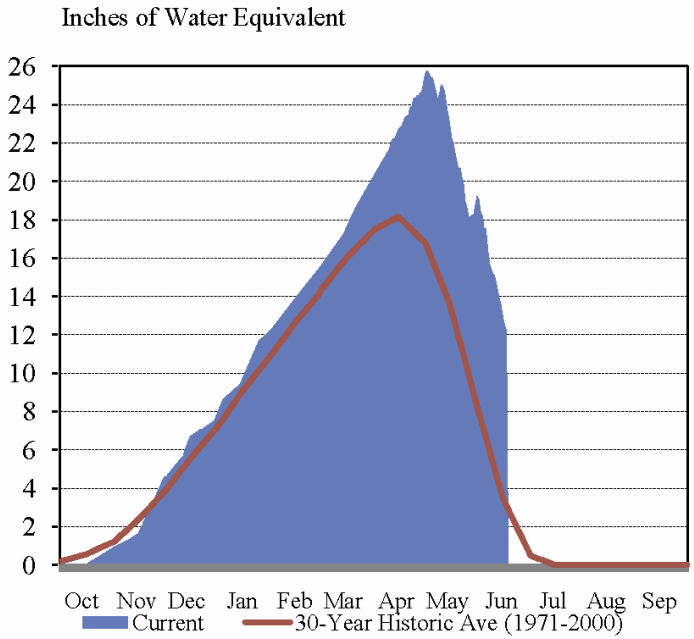
Plains Snowpack

25 February 2011

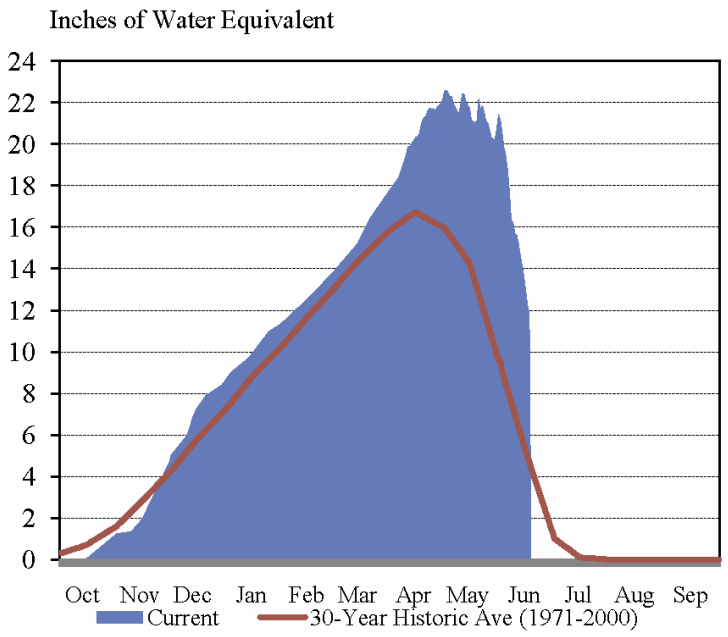


Missouri River Basin
Mountain Snowpack Water Content
2010-2011

Total above Fort Peck



Total Fort Peck to Garrison

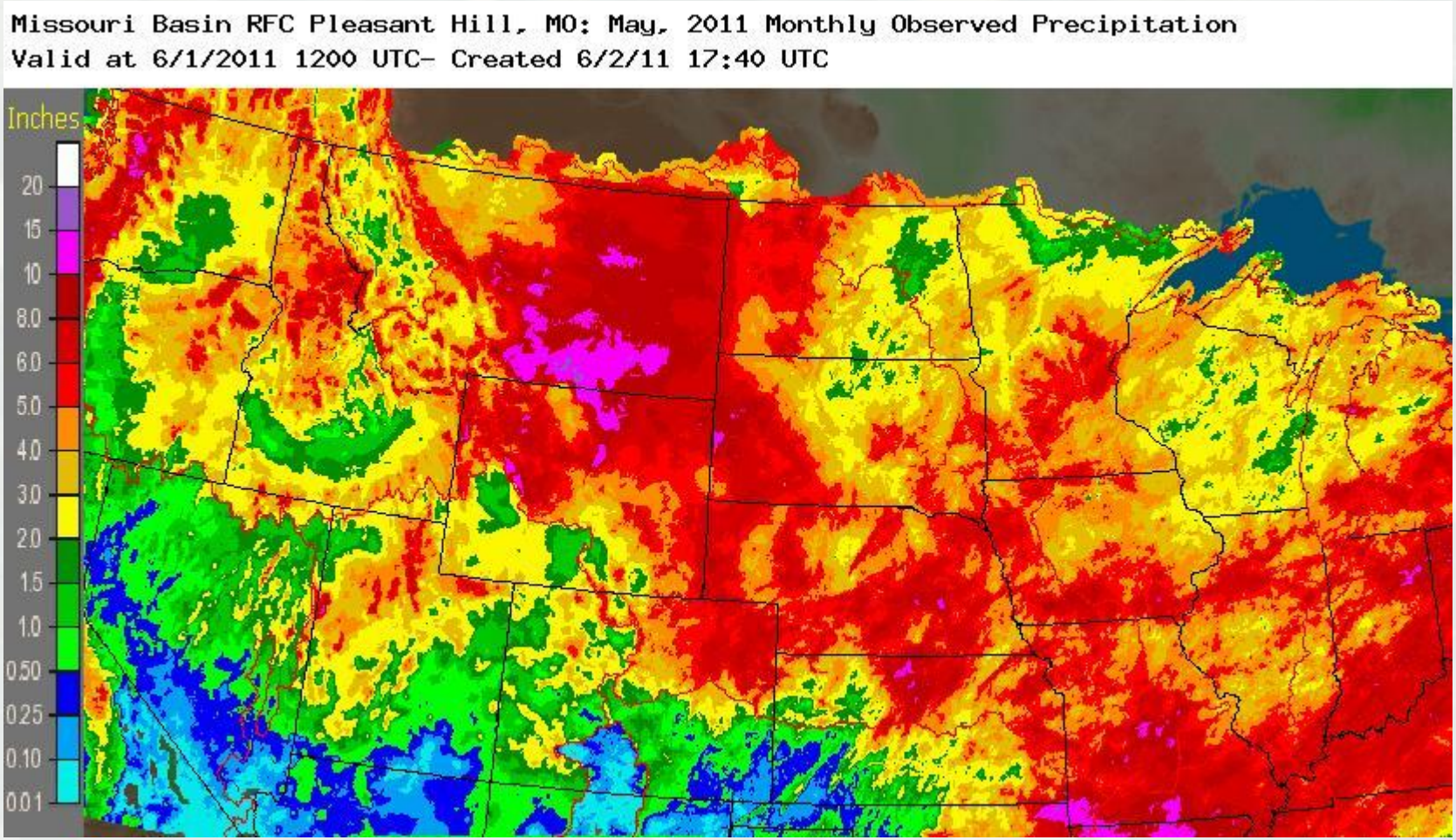


The Missouri River Basin mountain snowpack normally peaks near April 15. The mountain snowpack in both the "Total above Fort Peck" and the "Total Fort Peck to Garrison" reaches appears to have peaked on May 2 at 141 percent and 136 percent of the normal April 15 peak, respectively. The current mountain snowpack, as of June 17, is 67 percent and 71 percent of the normal April 15 peak in the "Total above Fort Peck" and the "Total Fort Peck to Garrison" reaches, respectively.

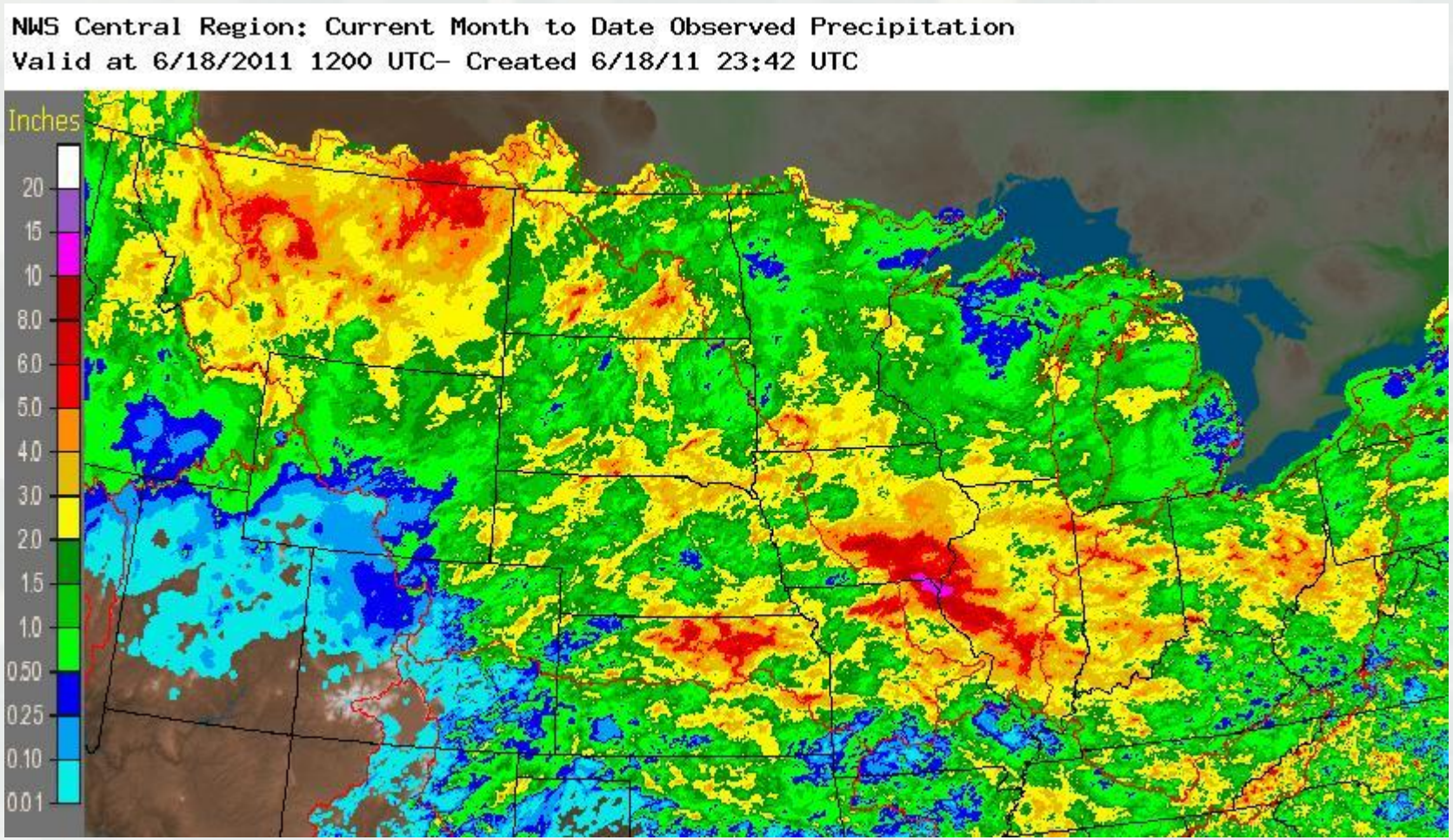
June 17, 2011

Provisional data. Subject to revision.

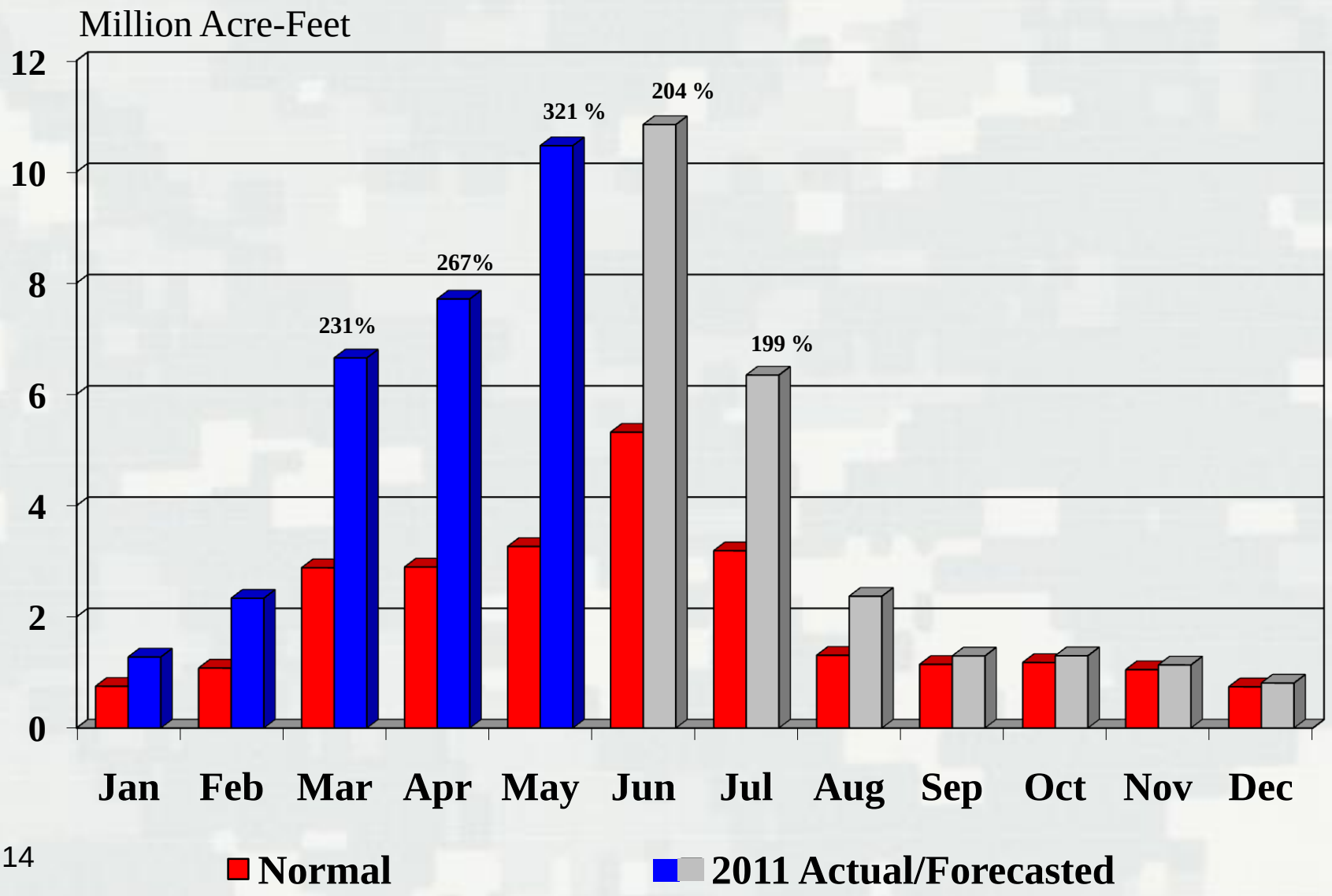
May 2011 Precipitation



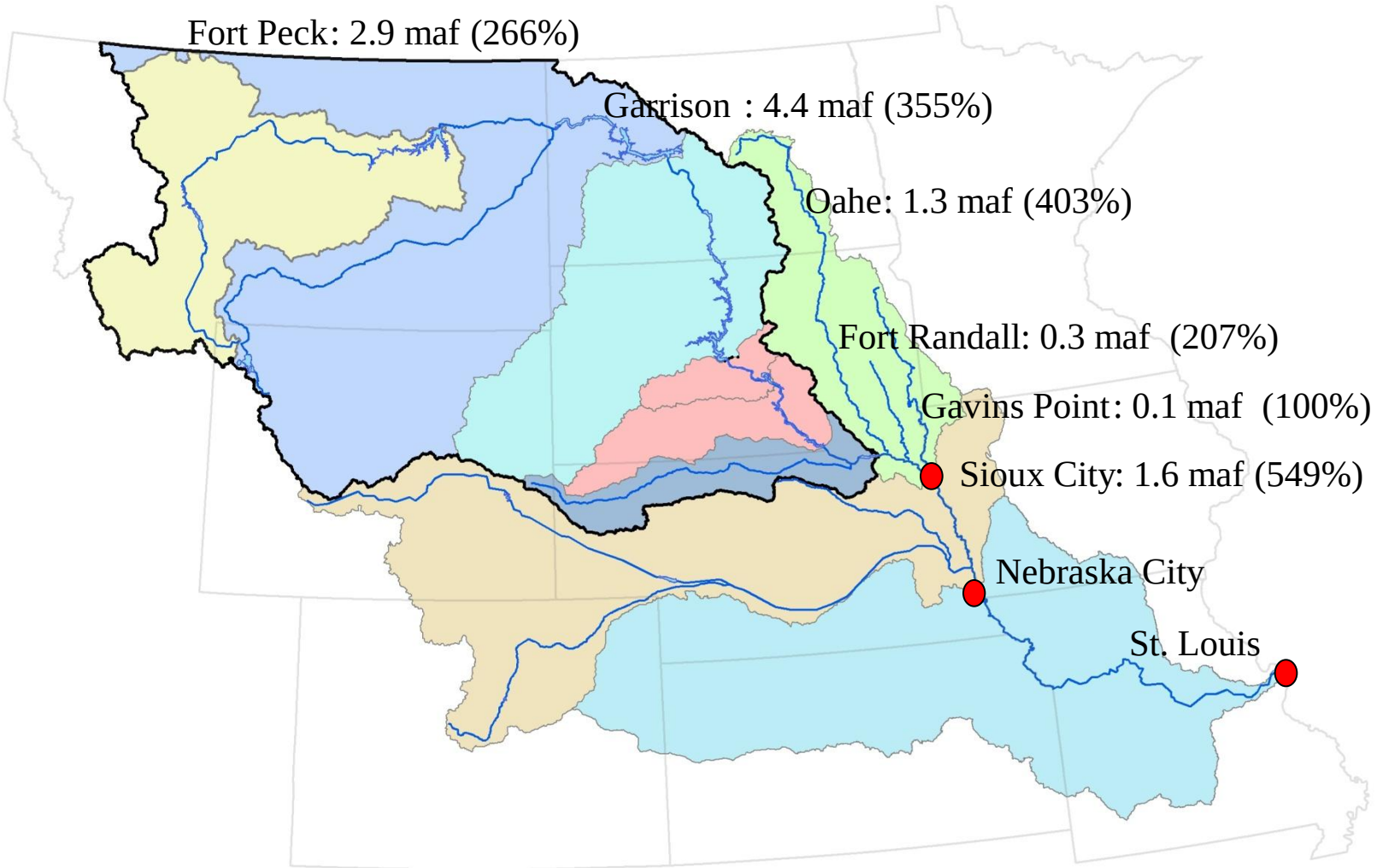
Month-to-date June 2011 Precipitation



Missouri River Runoff above Sioux City
2011 Actual/Forecasted versus Normal



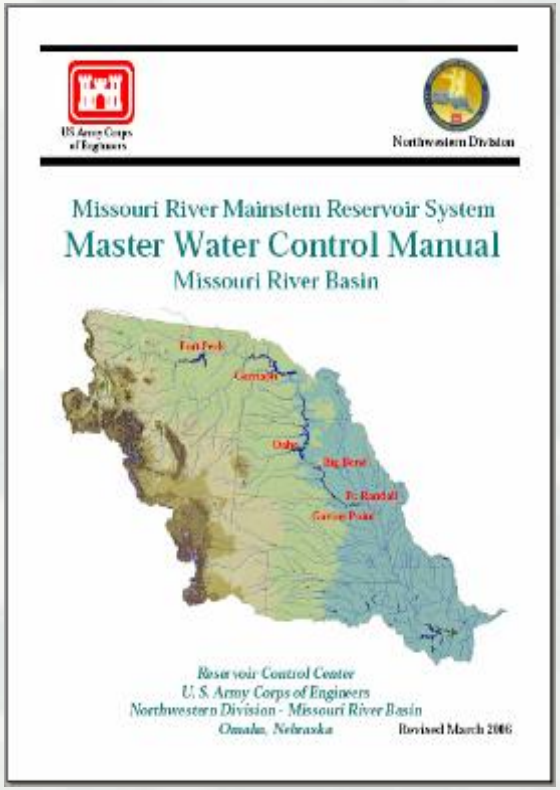
Missouri River Basin – May 2011 Runoff



Missouri River Mainstem Reservoir May 2011 Runoff

	2011	Previous Record
Fort Peck	2.9 MAF	2.6 MAF(1975)
Garrison	4.4 MAF	2.8 MAF(1978)
Fort Peck and Garrison	7.3 MAF	6.7 MAF(1952)
Total Above Sioux City	10.5 MAF	7.2 MAF(1995)

Missouri River Mainstem Reservoir System Master Manual



- First published in 1960
- Updated in 1975 and 1979
- Master Manual Review and Update began in November 1989 in response to late 1980's / early 1990's drought
- Amended Biological Opinion received from USFWS in December 2003
- Manual was revised for drought conservation in March 2004
- Again revised in March 2006 for Gavins Point spring pulse
- Annual Operating Plan (AOP) developed annually in accordance with Master Manual

2011 Mainstem System Regulation

- Mainstem Reservoir System has been operated in accordance with the Master Manual
- Release schedules have been coordinated with LRD and MVD, but we do not have authority to regulate the mainstem reservoir system solely for the benefit of the Mississippi River
- No operational decisions have been driven by ESA (nesting least terns and piping plovers); reservoirs have been operating for flood risk reduction.

2011 Mainstem System Regulation

- Full flood control capacity of the mainstem reservoir system was available at the start of the 2011 runoff season
  - 2010 was 3rd highest runoff year on record
  - All flood water was evacuated prior to start of runoff
- Until rain events in May, there was no need to evacuate water at historic levels
  - April 1 runoff forecast = 33.8 MAF; Gavins Point peak releases = 39 to 45 kcfs
  - May 1 runoff forecast = 44.0 MAF; Gavins Point peak releases = 57.5 kcfs
  - June 1 runoff forecast = 54.6 MAF; Gavins Point peak releases = 150 kcfs
- High releases will continue through at least mid-August to evacuate stored flood water
  - Goal is to evacuate reservoirs to provide time for damage assessment and repair prior to next year's runoff season

Background slides

- Photos of 6 mainstem dams

Fort Peck

Garrison

Oahe

Big Bend

Fort Randall

Gavins Point